zontally by the wind. In the four experiments at St. Louis in the month of September all descended within fifty miles of St. Louis. In ten ascents during November and December the balloon traveled much farther, reaching 200 miles from St. Louis. In general it would seem that even in midsummer, at altitudes above four miles, there are perpetual freezing temperatures, and an upper air current blowing steadily from the west. The Blue Hill Observatory is again to be congratulated on the energy it shows in the matter of upper air observations, and it is to be hoped that Mr. Rotch will be able to continue the balloon work at St. Louis. Many such stations will be needed in order to perfect our knowledge of the atmosphere over the United States.—*C. A.*

TRAILS OF METEORS.

A newspaper clipping from Portland, Oreg., says:

Residents of the Knob Hill district going home last night (December 21, 1904), shortly after 6 o'clock were startled by the appearance out of the cloudy air of a meteor with a trail of fire behind it, flying close over the city, apparently not over 150 feet above them. It was glowing red and threw out sparks behind like the tail of a comet.

The quotation relates to a phenomenon that would give us much information about the upper atmosphere if only the observers would give us a more exact account of what they saw. The smokelike trail left behind by a meteor is undoubtedly higher up in the air than any altitude attained by balloons, and the changes that it undergoes must be supposed to depend, at least in part, on the atmospheric conditions in its neighborhood. What the meteorologist wants is a sketch, as exact as possible, of the location of the trail among the stars. Several successive sketches, stating the moments of time, and the apparent angular altitude, and the bearing or azimuth, would give us the basis for some calculation as to atmospheric influences. When several observers happen to see the same meteor from different points of view, their separate sketches of the trail would give us still more interesting results. A large collection of data of this kind has been made by Mr. W. P. Trowbridge of Columbia University, New York, N. Y., and every additional sketch would be highly valued by him.—*C. A.*

DARKNESS AT MEMPHIS.

From a newspaper clipping we learn that on December 2, about 10 a. m., a dark pall covered Memphis for about fifteen minutes. The sunlight was wholly cut off by a dense cloud and the darkness of night prevailed. Of course artificial light was used and business temporarily paralyzed, but the light returned as suddenly as it went. We are told that in some quarters a panic prevailed, and that some were shouting and praying, imagining that the end of the world had come. A similar darkness frequently attends a heavy local cloud, and is a common attendant upon prairie and forest fires and upon volcanic eruptions; everyone is familiar with the accounts of the great darkness attending the fogs that prevail in London during the winter season, and with less intensity in New York, Philadelphia, Chicago, and other large cities where soft coal is used.

Every intelligent person understands that such darkness gives no occasion for superstitious fears. However, we must recognize the fact that there are some in every class, ignorant or educated, American or foreign, rich or poor, who are liable to loose self control when anything very unexpected occurs. A panic is almost as easily precipitated among men, women, and children as it is among herds of animals. For the Weather Bureau men it should be a proud record that they have stayed many panics by words of assurance and a cool bearing. We ought never to forget that every natural phenomenon has a natural cause, and requires to be considered and treated calmly. No matter what the impending disaster, the first requisite is to preserve one's self-possession and help others to do the same.—*C. A.*

FLOOD ON THE SOUTH CANADIAN RIVER, IN OKLAHOMA AND INDIAN TERRITORY, OCTOBER 1-4, 1904.

The Canadian River rises in eastern New Mexico and flows across the panhandle of Texas into Oklahoma and Indian Territory, where it joins the Arkansas. In the preceding number of the MONTHLY WEATHER REVIEW, page 466, we published an account of the floods in New Mexico due to heavy rains in that Territory from September 26–30. The resulting flood during the first days of October on the Grand River, below the point where it enters Oklahoma, is described in detail by Mr. C. M. Strong, Section Director, in the October and November reports of the Oklahoma and Indian Territory section of the Climate and Crop Service of the Weather Bureau. That the flood originated in the mountains of New Mexico is shown by the fact that only in that State were there any heavy rains on the Canadian River basin between September 25 and October 4. Mr. Strong states:

The flood of the South Canadian River of October 1 to 4, 1904, will stand memorable as the most destructive one in the history of this section since its settlement. To thoroughly understand its destructive effects one must have a knowledge of the topographical features of that stream.

Finding its source in the mountain ranges of New Mexico, it thence meanders southeastward across the high uplands of the Texas panhandle to the fertile plains of Oklahoma, and on through the Indian Territory to its connection with the Arkansas River.

Throughout its course its bed lies inclosed in a wide valley, whose bottom levels are but slightly above the surface of the stream. Its waters are usually shallow, of small width, and to a large extent are underground throughout the year, the usual width of the surface stream varying from 60 to 200 yards.

Previous to the flood the river valley was covered with fertile farms from its entrance into Oklahoma to its mouth in the Indian Territory, rich with fields of cotton, corn, and wheat.

Conceive in your mind this beautiful and fertile valley, rich in the finest products of the earth, and then turn to the results following the flood.

The feeble stream, winding its way in a shallow bed, became a vast flood that rolled a wall of water eighteen to twenty feet deep, in places spreading from hill to hill, with width varying from one to two miles, sweeping everything from its path and covering the valley with sand from one-half to four feet in depth, completely obliterating everything in the form of vegetation.

The force of the water was so tremendous that nothing could stand in its course; crops, bridges—both iron and wooden—trees, and houses were swept away like straws and swallowed up in the sands. The roar of the waters was heard for miles on either side, like that of the sea.

The scene along the full course of the river beggars description. The fertile valley is to-day practically destroyed, and its heretofore valuable farms are worthless, as the sand with which they are covered can never be removed. Many of the farmers are left destitute, nothing of any value remaining after the flood.

The flood originated in the mountains of New Mexico, and in successive waves swept the full course of the river, indicating that terrific cloudbursts were the cause of the phenomenon.

During the progress of the flood over this section the weather was generally clear and pleasant, alleviating to some extent the suffering that was caused to the people made homeless by its destructive effects.

The nearest estimate that can be made of the damage caused is as follows: Loss to personal property, crops, and bridges, $600,000; loss to farms by overflow, $3,000,000.

At Stone, Okla., where before the flood there was merely a dry bed of sand about half a mile wide, the river attained a depth of twelve feet and width of two miles. At Bridgeport, Okla., the river rose slowly all day on the 1st, and by the morning of the 2d was six feet above the normal. It continued to rise slowly on the 2d, and at 5 a. m. on the 3d a wave eight feet high struck the railway, washing out three-fourths mile of embankment on the Choctaw Railroad and one and one-half miles on the Rock Island Railroad. Thirty quarters of 160 acres each were covered with sand to a depth of from two to four feet, and some are completely washed away. The following table is based on reports from postmasters and others at the places mentioned.

The distances given in the second column are obtained by measurements on a postroute map, following the windings of the river as closely as practicable. According to the contour map of the U. S. Geological Survey, the elevations on the

river are approximately as follows: 2000 feet, about 24 miles above Grand; 1500 feet, midway between Taloga and Thomas, 1000 feet, four miles above Union; 500 feet, 35 miles below Garner.—*F. O. S.*

Depth and width of the Canadian River during the flood of October 1-4, 1904.

[Stations are arranged in order from above toward the mouth.]

Stations.	Distance from preceding place.	Greatest depth.	Average width at highest stage.	Width before flood.
	Miles.	*Feet.*	*Miles.*	
Grand, Okla.		15	1¾	¼ mile.
Stone, Okla.	33	12	2	Dry.
Taloga, Okla.	41	*	¼ to 2	
Thomas, Okla.	29	12	1	30 feet.
Ethel, Okla.	8	†	1	50 yards.
Thompson, Okla.	10	19½	1½	60 yards.
Bridgeport, Okla.	6	18	1⅛	125 yards.
Niles, Okla.	17	18	1⅛	50 feet.
Union, Okla.	15	18	4	60 yards.
Mustang, Okla.	13	30	1	500 feet.
Noble, Okla.	30	20	1½ to 2	400 to 800 feet.
Purcell, Ind. T.	11	12	1	½ mile.
Lexington, Okla.	1	15	1	½ mile.
Pecan, Okla.	11	‡	1¼	¼ mile.
Buckhead, Okla.	2	12 to 15	2½	
Lakeview, Okla.	4	10	2	60 yards.
Corner, Okla.	24	30	1	40 yards.
Tyrola, Ind. T.	9	20	⅛	100 yards.
Francis, Ind. T.	9	20	⅔	½ mile.
Calvin, Ind. T.	30	20	¾	¼ mile.
Garner, Ind. T.	32	§	1	

*12-foot rise. †4½-foot rise. ‡5½ feet higher than ever known before. §3-foot rise.

A PROPOSED INTERNATIONAL CONTEST OF WEATHER FORECASTERS.

We think that all sensible men will agree with the sentiments expressed in the following letter.—*C. A.*

WASHINGTON, D. C., *January 7, 1905.*

MR. FERNAND JACOBS,
President, Société d'Astronomie, Brussels, Belgium.

DEAR SIR: I have the honor to acknowledge the receipt of your letter of the 14th of December, informing me that the Belgian Society of Astronomy has decided to organize an international contest of weather forecasters, to be held at Liege, September, 1905, during the session of a congress of meteorologists, and you further invite me to become one of the judges in that contest. If your action in the matter had not extended beyond this invitation, I should have simply declined it. But you have sent me a printed circular, stating in detail the terms under which the competition is to be carried out, and mentioning the individual names of those composing your jury, among which you have included my own name without my authority. I desire to protest against this action in the most emphatic manner possible, and shall communicate my protest to all of those distinguished gentlemen whom you have made my colleagues. It is not impossible that you have also printed their names without their personal permission, and that many of them will agree with me in my opinion of your action and of the inexpediency of any such public competition for prizes in forecasting.

It is probably not unknown to you that in America, as in Europe, there are numerous persons who derive profit from the sale of almanacs and newspaper forecasts, to the great disgrace of meteorology. This class of men, even though they fail to win the offered prize, will draw great profit from such a public competition and official scientific recognition; I protest against allowing them any chance of receiving such favorable public recognition at the hands of scientific men.

Meteorological science, and especially the art of forecasting, can not be furthered by such public tests and competitions as those you would encourage, and you must not expect me to serve as a member of your jury. Up to the present time the official forecasts published by European and American nations have been based on the daily weather maps, and made in accordance with all the knowledge that is embodied in what we call the science of meteorology. This knowledge is public property; the methods of forecasting have frequently been explained. Forecast students are accepted in every government office and encouraged to become thoroughly acquainted with the methods used therein. A competitive examination between such students seeking an appointment to office or a promotion would be eminently proper, but there is apparently no occasion to institute such a competition at Liege.

The phraseology of the forecasts differs in diffent countries in accordance with the needs of the people, and some attempt much more detailed forecasts than others. In no case, so far as I know, do the forecasts extend more than two days in advance, except for the seasonal forecasts in India. All such work is a legitimate application of science, and the whole meteorogical world is cooperating in efforts to improve it. It is not advisable to set these scientific men and government officials into public competition or rivalry with one another. Who would think of doing this in the matter of astronomical ephemerides or predictions of the places of the sun, moon, or planets?

The last article of your projet provides that amateurs may compete for the prize for long-range forecasts of the details of the weather during the month of September, 1905. But there is no rational or scientific basis for such long-range forecasts, and therefore the planetary astrologers or any one who guesses what September will be may come into the competition and receive a diploma of merit if by accident he makes a partially satisfactory forecast for the month. But such a single success can have no weight whatever in establishing the merit of any system. As before said, the competition itself can have no value to the scientific world, but will be taken advantage of by the popular charlatans and imposters of Europe and America.

Your proposed competition is directly contrary to the expressed opinion of some of the best European meteorologists, and I may especially refer you to the accompanying letter of Prof. J. N. Pernter, reprinted from the MONTHLY WEATHER REVIEW for May, 1904. You may be interested also in reading the enclosed pages from the advance proof of my Annual Report, in which I have referred to long-range forecasts.

Regretting that I can not encourage your public competition, but with the best wishes for the prosperity of the Belgian Astromical Society, I am,

Very respectfully,
(Signed) WILLIS L. MOORE,
Chief U. S. Weather Bureau.

CORRIGENDA.

MONTHLY WEATHER REVIEW for August, 1904, p. 372, column 2, line 10, "involve" read "evolve."

MONTHLY WEATHER REVIEW for October, 1904, p. 458, column 2, Table 1, number of days with thunderstorms in May, 1895, for "6" read "5"; p. 459, column 1, Table 4, average duration of thunderstorms in November, 1890, for "...." read "0"; p. 465, column 1, line 11, for "Helmholz" read "Helmholtz," line 16, for "Neuchoff" read "Neuhoff," line 18, for "Eckholm" read "Ekholm."

THE WEATHER OF THE MONTH.

By Mr. WM. B. STOCKMAN, Chief, Division of Meteorological Records.

PRESSURE.

The distribution of mean atmospheric pressure is graphically shown on Chart VIII and the average values and departures from normal are shown in Tables I and VI.

The mean barometer was highest over the Plateau regions, with the crest over western Wyoming. It was lowest over eastern New England.

The mean barometer was above the normal in the west Gulf States, the Mississippi and Missouri valleys, slope and Plateau regions, the south Pacific region, except the extreme southwestern portion, and the middle Pacific region, except the extreme northwestern portion. In all other districts it was below the normal.

The greatest positive departures from the normal ranged from + .10 to + .18 inch, and occurred in the middle and southern Plateau regions. The greatest negative departures ranged from — .10 to — .15 inch, and occurred over New England, and the extreme eastern portion of New York.

The mean pressure decreased from that of October, 1904, in New England, Middle Atlantic States, northern portion of the South Atlantic States, Ohio Valley and Tennessee, except the western portion, the Lake region, and the north Pacific district. In all the remaining districts it increased.

The maximum increase ranged from + .10 to + .16 inch, and occurred over the middle and southern slope and Plateau regions, the southern portion of the northern slope region, and southwestern North Dakota. The maximum decrease ranged from —.10 to —.17 inch, and occurred over New England, and the northeastern portion of the Middle Atlantic States.